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FAO PLANT PROTECTION BULLETIN

is issued as a medium for the dissemination of information received by the World Reporting Service on Plant Diseases and Pests, established in accordance with the provisions of the International Plant Protection Convention, 1951. It publishes reports on the occurrence, outbreak and control of pests and diseases of plants and plant products of economic significance and related topics, with special reference to current information. No responsibility is assumed by FAO for opinions and viewpoints expressed in the Bulletin.

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PROBLEMS OF ANIMAL FEEDING IN EUROPE

This study, a recent issue (No. 51) in the FAO Agricultural Development Paper series, has been compiled from papers and country reports submitted to the Technical Meeting on Problems of Animal Feeding in Europe, held in Paris in March 1953 under the joint auspices of FAO and the European Association for Animal Production.

The editors, in selecting and arranging their material, have been concerned, in particular, to focus attention on those problems confronting the European farmer as a result of the recent trend towards the widespread use of home-grown feedingstuffs.

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FAO Plant Protection Bulletin

VOL. III, No. 12 A Publication of the SEPTEMBER 1955

World Reporting Service on Plant Diseases and Pests

Insect Pests in British Colonial Dependencies: A Half Yearly Report[1]

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Asia

Cyprus

THE citrus mussel scale, *Lepidosaphes beckii* (Newm.), was first observed in a small area in Cyprus in 1934 under conditions that suggested that it had been introduced a number of years previously. In spite of control measures and quarantine restrictions prohibiting the movement of *Citrus* plants and fruits from infested to uninfested areas, this scale is still spreading. The large citrus-growing areas of Famagusta and Morphou are still free of the pest.

Populations of the citrus soft scale, *Coccus hesperidum* L., are normally kept at a low level by various parasites, but an unusually heavy infestation was recently observed on grape-fruit trees that had been treated earlier with parathion.

In view of the possibility that honeydew secreted by the citrus mealybug, *Planococcus citri* (Risso), may attract the Pyralid moths, *Myeolis ceratoniae* Zell. and *Cryptoblabes gnidiella* (Mill.), to oviposit on *Citrus* fruit, an attempt is being made to introduce, from California, the Coccinellid, *Cryptolaemus montrouzieri* Muls., a predator of the citrus mealybug.

[1] The present report covers the period from January to June 1955.

Africa

Tanganyika

Maize and pastures in the Moshi district have been affected by a serious outbreak of Lepidopterous larvae, including *Prodenia litura* (F.), *Plusia orichalcea* (F.) and *Laphygma* spp. Hundreds of acres of maize have been lost.

The Dynastid beetle, *Heteronychus licas* (Klug), caused severe damage to a number of newly planted sugar-cane fields at Arusha-Chini, and appeared to be insensitive to BHC on the sets. The cane eventually recovered, but it is thought that *H. licas* will be of importance in the future. The area concerned is the most important sugar-cane growing center in the territory, the crop being grown on alluvial soil under irrigation. This species is a well-known pest of maize in Southern Rhodesia and has been recorded attacking newly planted cane in Natal. Several other species of the genus cause similar damage in Africa.

Zanzibar

As a precaution against the introduction of *Aceria sheldoni* (Ewing) from the mainland of Africa, an order under the Plant Protection Decree, 1937, has been promulgated, prohibiting the importation of fruits and plants of all *Citrus* spp.

British West Indies and South America

British Guiana

A serious outbreak of *Castnia daedalus* (Cram.) (Lep., Castniidae) on coconut is reported.

Trinidad

An outbreak of the giant grasshopper, *Tropidacris dux* (Dru.) (Orthopt., Acrididae), was observed in the south-west corner of the island in June 1954 and at that time constituted a potential danger. The population of this insect rose alarmingly and became dispersed over about 1,000 acres. As they developed, the hoppers attacked a succession of plants and crops, beginning on bitter wood (*Quassia amara*), which was followed by chennet (*Melicocca bijuga*), *Musa* spp. and finally coconut, where appreciable defoliation occurred. Localised spraying with BHC was unsuccessful in controlling the hoppers, but the resultant adults did not produce a further generation, and had completely disappeared by January 1955. There are a few previous records of this species occurring in large numbers at irregular intervals in this region. They must either migrate from Venezuela or have inaccessible breeding grounds locally. Neither theory has yet been proven. Recovery from these attacks is normal, but there will be a considerable loss in the coconut crop in 1955.

A serious outbreak of the West Indian cane fly, *Saccharosydne saccharivora* (Westw.) (Homopt., Delphacidae), developed in one isolated field in the south in June 1954. Although common in the West Indies, this insect is usually considered rare in Trinidad.

An unusual outbreak of *Nausibius clavicornis* (Kug.) (Col., Cucujidae) occurred in bulk sugar at a sugar factory. Experimental investigations have been undertaken on its mode of infestation.

In the field of control, recent studies have shown evidence of alleged resistance to chlorinated hydrocarbon insecticides in the sugar-cane froghopper, *Aeneolamia varia* (F.) (Homopt., Cercopidae), against which the application of these insecticides has been the standard treatment. These so-called resistant strains have been controlled by phosphorus derivatives, including malathion.

Encouraging results are being achieved against the banana weevil, *Cosmopolites sordidus* (Germ.) (Col., Curculionidae), by dipping banana and plantain suckers, and spraying the plants every six months, with a solution of aldrin or dieldrin. Final recommendations await the results of experiments laid down for two more years. Meanwhile, rendering planting material clean by paring away larval tunnels and destroying any insects encountered still remains the standard method of control, though growers are being encouraged to supplement this with the aldrin treatment.

With the increased acreage under bananas, the banana weevil is becoming very important.

On the more progressive coconut estates an effort is made to control the palm weevil, *Rhyncophorus palmarum* (L.), and the bearded weevil, *Rhina barbirostris* (F.), which have been incriminated with the spread of the nematode (*Aphelenchoides cocophilus*), the causal agent of red ring disease of coconut. The methods employed are either to trap with freshly cut coconut tissue or to spray with any of the chlorinated hydrocarbon insecticides.

Survey of Potato Root Eelworm in Denmark

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IN the report of the Quarantine Working Party, published by the European Plant Protection Organisation in 1951, it was recommended that a standard soil sampling system should be adopted for the investigation of the occurrence of potato root eelworm (*Heterodera rostochiensis*). Considering the interesting results of such surveys obtained by some other countries and preliminary Danish investigations as well, it was decided to follow the recommendation in order to ascertain the distribution and the extent of infestation of this eelworm in Denmark. The standard method was applied and in the four years, 1951–1954, soil samples were taken systematically in all fields where certified seed potatoes were grown, and in several other areas.

The first observation of potato root eelworm in Denmark dates back to 1928. Later, attacks have been found in gardens of several towns, mostly located on the coasts of the Baltic and Kattegat, a fact which may have some connection with the small frontier traffic. The nematode at present is thought to be rather common in town gardens and allotments but very rare in the agricultural areas proper, where an eight year rotation is the rule. The survey strongly supports this belief.

The detailed results of the survey carried out from 1951 to 1953 have been published.[1,2,3]

[1] BOVIEN, P. and LINDHARDT, K. 1953. Distribution of potato root nematode in Denmark. Investigations 1950-51. Tidsskr. Planteavl 56: 592–600.

[2] LINDHARDT, K. 1954. The distribution of the potato root nematode in Denmark. Continued investigations 1952. Tidsskr. Planteavl 57: 701-705.

[3] MYGIND, H. 1955. The distribution of the potato root nematode in Denmark. Continued investigations 1953. Tidsskr. Planteavl 58: 722-728.

Potato Seed Fields

During the four years that the survey was carried out, soil samples with cysts of the potato root eelworm were found to be rare. Of the infested samples more than 25 percent contained only one full cyst or only empty cysts; in such cases the owner was given the opportunity to have new samples analyzed. But the production of certified seed potatoes is not permitted on farms in which cysts of the eelworm have been found.

Soil samples were taken by inspectors charged with potato seed field inspection, and in special cases by senior inspectors of the Government Plant Inspection Service.

To illustrate the extensiveness of the survey, the distribution of samples taken from seed potato fields and of samples containing cysts of the potato root eelworm in 1952 are given in Figures 1 and 2 respectively and are summarized as follows:

	1951	1952	1953	1954
Soil samples analyzed	24,751	17,602	12,625	21,571
Samples with cysts:				
number	53	29	4	19
percent	0.21	0.16	0.03	0.09

Parishes

In view of the fact that gardens and other areas in which potatoes are grown without due regard to crop rotation are prone to eelworm infestation, eleven parishes were selected for inclusion in the 1952 survey and eleven others in the 1953 survey. In those parishes soil samples were taken from all gardens and potato fields in order to locate possible infestations. Of the 22 parishes examined, it was found that 14 were entirely

Figure 1. Distribution of 17,602 soil samples taken from fields grown with certified seed potatoes in 1952 in Denmark. One point represents 10 samples.

free from the potato root eelworm, 6 slightly infested, and only one village and one limited area badly infested. The results of the two years' survey are summarized as follows:

Soil samples analyzed	10,579
Samples with cysts:	
number	60
percent	0.56

A Town and Its Surroundings

From the old cathedral town Ribe (population 7,200), located at the southwest of the peninsula near the coast, complaints were received that infested gardens were threatening the surrounding districts. In order to obtain information on eelworm infestation in this type of town community, i. e. one which is surrounded by allotments and in which many residents have their own gardens, soil samples were taken from all gardens at Ribe, and in potato fields about one mile out. The results were as follows:

Soil samples analyzed	1,200
Samples with cysts:	
number	95
percent	7.9

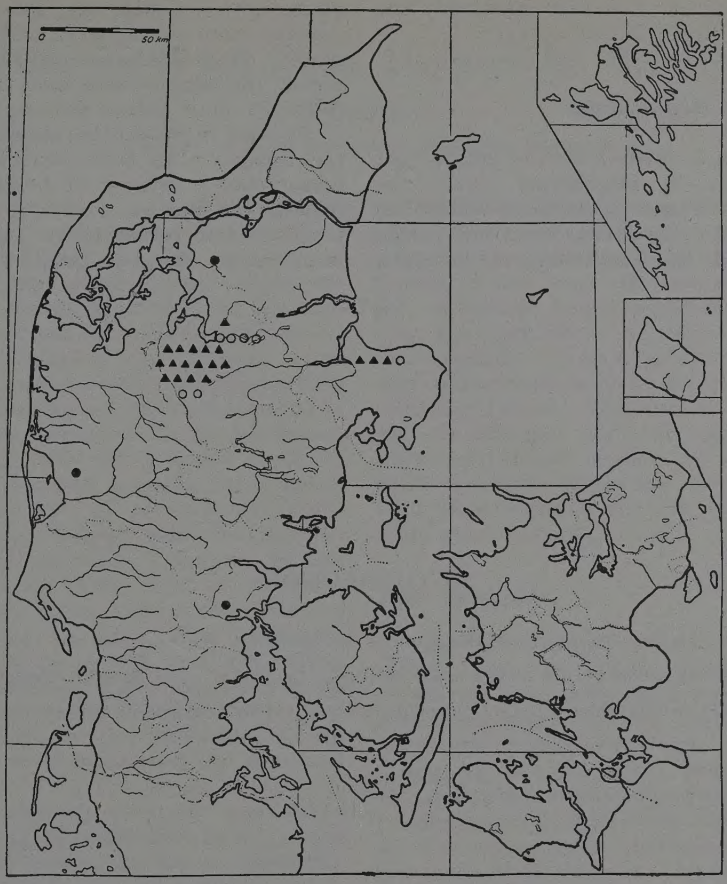

Figure 2. Distribution of soil samples containing cysts of the potato root eelworm in 1952. ▲ indicates a sample containing several full cysts; ● containing one full cyst, O containing empty cysts only.

When all samples were recorded on registration maps, it appeared that the infestation had spread from the town out to allotments situated on main roads for a distance of about one mile. No farms, however, were found to be infested.

Nurseries

It is an old right of nurserymen to act as dealers of plants originating from other nurseries which produce specialities. In order to retain this right under the rigid control specified in the internal and foreign quarantine regulations, the Danish Nurserymen's Union asked, in 1953, to have all their premises sampled for the potato root eelworm. Of the 1,891 soil samples taken from those nurseries, only 2 contained cysts. In 1953 and 1954, 1,075 soil samples were further analyzed in connection with the export of nursery products; all were found to be free from cysts.

In addition, to meet the requests of gardeners and small-holders producing vegetables and flowering annuals for planting-

out, 954 soil samples were analyzed and only 4 were found to contain cysts.

Preventive Regulations

In holdings infested by the potato root eelworm and in neighboring areas, the Government Plant Inspection Service is empowered by legislation to forbid potato growing and the movement of potatoes, plants with soil adhering, refuse and other possible carriers from such holdings to other places. If the eelworm is found in any parish the Service also has the power to forbid or limit potato growing.

In order to protect the interests of growers, the legislation in force provides that any nurseryman or grower of potato seed may request the Service to search surrounding premises for eelworm. If infested, such areas can be closed to potato growing.

A CORRECTION

In Vol. III, No. 10 of this Bulletin, on the cover and page 145, the name of the senior author of the paper entitled "Control of olive fly with dieldrin and methoxychlor in Israel" should read "Z. Avidov" instead of "Z. Avidor".

Notes on Some Plant Diseases in Malaya [1]

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In Malaya where, in a warm humid climate, a luxuriant plant growth continues throughout the year, the paucity of rusts, smuts and other diseases which are disseminated mainly by wind-borne inoculum must be attributed to some climatic factor. Temperature, ranging approximately from 70° to 94° F. in the coastal plains, may have some effect, but it can hardly be expected to inhibit the development of these diseases. Rainfall, practically all of which comes in the form of frequent, short but very heavy showers, appears to be the primary factor. The heavy rains not only wash the inoculum off the plants but batter it into the ground beyond recovery. This effect of rains was quite evident from careful observations throughout the country. Even pathogens that reproduce in a wet or sticky matrix are not prevalent. The only common diseases are sooty molds and a few others that develop mainly on the underside of leaf surfaces or are disseminated by ants and other insects.

No virus diseases of plants were found but this lack of detection may be due to the fact that the author is not a virologist. However, observations on tobacco and a few plots of potatoes and tomatoes failed to reveal any signs of familiar virus disease symptoms.

On the other hand, various root, stem and shoot rots and diseases that develop internally in plants, are very prevalent. Many of these diseases are caused by organisms such as bacteria of the group *Bacterium carotovorum* (L. R. Jones) Lehmann & Neumann (*Erwinia carotovora* [Jones] Holland) and fungi of the genera *Botryodiplodia*, *Colletotrichum*, *Gloeosporium* and *Cladosporium*, which ordinarily affect weakened or injured plants. Subject to an annual precipitation of well over 100 inches, the very old, coarse and highly acid soils of Malaya may be expected to be deficient in plant food minerals. There is no doubt, therefore, that soil deficiencies are the primary predisposing factors. The use of appropriate soil amendments and the application of improved cultural methods on some of the better-managed estates are already showing their effectiveness in the control of some of these plant diseases.

Rice Diseases

Leaf spots caused by *Helminthosporium oryzae* Breda de Haan, *Nigrospora* spp., *Curvularia* spp., *Cercospora oryzae* Miyake, *Piricularia oryzae* Cavara, *Pestalotia oryzae* Hara and *Coniothyrium* spp. were found mainly in rice nurseries. Seed treatment with an organic mercury disinfectant provides reasonably good control of these diseases.[2] In the transplanted rice fields traces of leaf spots were common, but only in occasional fields were they sufficiently abundant to cause any concern. Rice blast, caused by *Piricularia oryzae*, occurred in isolated spots. "Penyakit merah," a local name meaning "red disease," which lately has been considered to be a physiologic disease of rice, is apparently a soil deficiency disease of considerable importance. It occurs in patches of a few square yards to several acres, mainly in areas under relatively stagnant water. The first symptom of the disease, appearing a few weeks after transplanting, is a reddening of leaves from the tip towards the base. The affected plants stop growing

[1] Contribution No. 1481 from the Botany and Plant Pathology Division, Science Service, Canada Department of Agriculture, Ottawa, Ontario. These notes are based on observations made by the author during his service in Malaya under the Colombo Plan.

[2] CHEREWICK, W. J. 1954. Studies on seed-borne microflora and the effect of seed treatment of rice. Malayan Agr. Jour. 37 : 169–172.

and, if conditions are not improved, they wither and disappear.

False smut, *Ustilaginoidea virens* (Cke.) Tak., was found in trace amounts throughout the country. Smut, *Neovassia horrida* (Tak.) Padwick & Azmatullah Khan, was found for the first time in Malaya in the 1953-1954 crop. Its distribution throughout the country would indicate its presence there for a long time but its scarcity has prevented earlier observations.

Diseases of Other Crops

Oil Palm. A leaf blight of young oil palm plants was prevalent in some areas. Diseased specimens yielded mainly a species of *Colletotrichum* but the fact that this disease did not occur on seedlings in well-fertilized nurseries indicates that soil deficiency was probably the primary cause. A similar *Colletotrichum* blight was observed also on pepper, avocado, lime, tea and other woody crop plants.

Root and stem rot, caused by *Ganoderma pseudoferreum* (Wakefield) Overeem & Steinmann, was common, particularly in old stands.

Tea. Blister blight, *Exobasidium vexans* Massee, was common on hill plantations 4000-5000 feet above sea level, but was not found in lowland fields. Root rot due to *Ganoderma pseudoferreum* was common in old plantations.

Cocoa. Root rot due to *Ganoderma pseudoferreum* was common but not of great economic importance. Pod blight and pod rot, associated with various fungi, was probably caused primarily by soil deficiency.

Cloves. Both *Cryptosporella eugeniae* Nutman & Roberts, a virulent wound pathogen, and *Valsa eugeniae* Nutman & Roberts, the causal organism of the sudden death disease as reported from Zanzibar, were discovered on Penang Island [3] where the clove plantations of Malaya are concentrated. *V. eugeniae* was found to invade clove plants not only through the roots as originally reported by Nutman and Roberts,[4] but also through stems and branches. The organism probably enters through wounds. Its course through the plant can readily be followed by the brilliant yellow color of the invaded wood.

Pineapple. Various leaf spots and root and fruit rots were probably due to soil deficiencies. Inoculation tests were negative and diseased plants recovered when they were transplanted into fertile garden soil.

Ginger. Rhizome rot caused by bacteria of the *Bacterium carotovorum* type was prevalent in some areas. It was particularly destructive in one newly opened district where ginger was planted for the first time. The occurrence and distribution of this disease indicated a probability of soil deficiency as the primary cause. A similar disease occurred on a number of vegetable crops, particularly on crucifers.

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[3] WILTSHIRE, S. P. 1955. Plant diseases in British Colonial dependencies: a half-yearly report. FAO Plant Prot. Bull. 3 : 140.

[4] NUTMAN, F.T. and ROBERTS, F.M. 1953. Investigations into diseases of the clove tree in Zanzibar. East African Agr. Jour. 18 : 146–154.

Plant Disease Situation in the United States [1]

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Cercospora lathyrina on Winter Pea in Mississippi

WEIMER [2] in 1941 recorded *Cercospora lathyrina* Ell. & Ev. on experimental plantings of Austrian Winter and similar types of pea (*Pisum* spp.) grown under cage in Georgia. He pointed out that the disease had never been seen in the field and was not known to be of any economic importance.

W.W. Hare, of the Mississippi Agricultural Experiment Station, however, reports now what appears to be the same disease in the field in Mississippi. He observed that a breeding strain of Austrian Winter type pea planted in October 1953, at the Coastal Plain Branch Experiment Station near Newton, Mississippi, showed a minor leaf spot in localized areas in February 1954. All affected plants were in low parts of the field where water had stood after rains. In early May, the disease had spread over the field and became very conspicuous. In appearance it was very similar to severe attacks by *Ascochyta*. Individual plants had numerous spots on the leaves, stems, and pods.

Symptoms observed in Mississippi agreed closely with those recorded by Weimer except that Weimer did not describe the disease on

[1] This report is based upon material submitted by Collaborators of the Plant Disease Epidemics and Identification Section, Agricultural Research Service, United States Department of Agriculture.

[2] Weimer, J.L. 1941. A leaf spot of peas (*Pisum* spp.) caused by *Cercospora lathyrina*. Phytopath. 31 : 1031–1034.

Figure 1. *Cercospora lathyrina* on pods of a strain of winter pea; the green pod on the left and the three dry pods on the right illustrate variations in number and size of lesions.

pods. On young pods lesions were inconspicuous, varying from minute flecks to very small brown lesions. As the pod reached full size, lesions enlarged slightly, up to 1-2 mm. in diameter, and occasionally one showed a grey center. When the pods matured and dried, the lesions became conspicuous and enlarged into black, felty patches covered by mycelium, often up to 5-8 mm. in diameter (Figure 1). The entire pod was tinged black as lesions coalesced.

When the plants were from halfway to completely dry and mature in late May, a recognizable lesion of this disease was difficult to find, except on the matured pods and stems. Apparently the heavily infected leaves had dried up and there had been little spread to the new top growth since early May.

Since no *Cercospora* leaf spot appeared in plots grown from the same seed lot at several other locations in Mississippi, a search was made in this affected field and adjacent areas for other winter legumes. The only other legume found was hairy vetch (*Vicia villosa*) (volunteer plants) which had leaf lesions containing *Cercospora* spores similar to those found on the pea. Further work is necessary to determine the identity of the *Cercospora* from pea and from vetch.

Curvularia Leaf Blight of Red Clover in Eastern States

K.W. Kreitlow and Helen Sherwin Yu, of the Field Crops Research Branch, Agricultural Research Service, United States Department of Agriculture, state that a leaf blight of red clover (*Trifolium pratense*) not previously recorded on this host in the United States has been observed since 1950 causing occasional damage in Maryland and Florida. The blight is due to *Curvularia trifolii* (Kauff.) Boed., which is common on leaves of Ladino clover (*T. repens*) in pastures in the Eastern States. In Japan the fungus was reported on both Ladino and red clovers and that was the only previous record of its occurrence on the latter host.

Symptoms on red clover are similar to those on Ladino clover. Lesions first develop as large, yellowed areas, and soon become watery gray, translucent and finally light brown. Affected leaves are often killed. When infection occurs near the base of a leaf, the fungus frequently attacks the petiole at the point where leaves are attached, causing the trifoliate leaves to collapse and droop characteristically. The isolates of the causal fungus from Ladino and red clovers showed no difference in morphology, cultural characteristics, or pathogenicity.

The appearance of this disease on red clover in the United States from such widely separated areas as Maryland and Florida suggest that the disease is likely to occur elsewhere in the East, but its presence may be obscured by the symptoms produced by other diseases or confused with diseases producing similar symptoms, such as anthracnose caused by *Kabatiella caulivora* (Kirchn.) Karak. and *Colletotrichum trifolii* Bain & Essary.

The increased prevalence of leaf blight on Ladino clover within the past 10 years may help to explain the appearance of the disease on red clover. As it may become more prevalent and destructive on red clover, particularly in the humid Eastern States, this disease should be taken into account in developing disease-resistant varieties for this area.

Discoloration of Radishes and Turnips Associated with Downy Mildew

According to B.D. Thompson and Phares Decker, of the Florida Agricultural Experiment Station, many reports of severe discoloration of pre-packed radishes during marketing were received in the 1953/54 season. Investigations in May 1954 showed that one type was largely present at the time of harvest. It was identical with the discoloration described as being caused by downy mildew (*Peronospora parasitica*). The fungus grew and fruited readily when affected radishes were stored at 68° F. It was also observed growing profusely on the hypocotyl and foliage of radishes in the field during cool, moist periods. On the Red Globe type of radish discolored areas were purplish to greyish-black and blotchy, generally on the upper half (Figure 2). The surfaces of affected radishes were sometimes rough and cracked. The internal tissue was greyish-brown to black streaked and firm. Discolored areas present at the time of packing

Figure 2. Radish discoloration caused by *Peronospora parasitica* in Florida, U.S.A.

continued to enlarge slightly and to intensify in color at 40°, 50°, or 70° F storage, but non-infected radishes remained free from discoloration. Field control of the disease and careful grading should largely eliminate this type of radish discoloration in the market.

E.L. Felix, of the Tennessee Agricultural Experiment Station, reported extensive firm brown internal discoloration of a Purple Top White Globe turnip, one of 20 bought in October 1954 and said to have been grown locally. *Peronospora parasitica* sporulated abundantly within 24 hours on moist incubation of slices. No external symptom was observed.

Outbreaks and New Records

Costa Rica

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Outbreaks of Mediterranean Fruit Fly

The Mediterranean fruit fly (*Ceratitis capitata*) was found in Costa Rica for the first time on 31 March 1955 in the Province of San José (Hatillo). It spread rapidly and soon became established on the central plateau in a large area. By the use of traps adult flies have been caught in the following localities:

Province of San José: Communes of Desamparados, Cantón Central, Santa Ana, Tres Ríos, Tibas, San Ignacio de Acosta.
Province of Heredia: Communes of Sta. Bárbara, San Pablo, Sto. Domingo, San Joaquin, Belén.
Province of Alajuela: Communes of San Josesito Grecia, Naranjo.

Infestation has been heavy in peaches but moderate in oranges and grapefruit. The pods of *Inga* spp. were also found attacked. When coffee berries develop, the situation may become more serious.

In co-operation with the United States Department of Agriculture, control operations have been organized in the hope of eradicating this insect. Stringent measures have been undertaken also to prevent its further spread.

The Mediterranean fruit fly was not previously known in any of the Central American countries.

Southern Rhodesia

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African Army Worm

During the summer of 1953–54 there was a widespread outbreak of African army worm (*Laphygma exempta* Wlk.), causing severe damage to maize and other cereal crops and in some places also to pastures and forage grasses. In 1955 adult moths were caught by light trap in Salisbury from early January to mid-March, one or two about every night, but no larval outbreak occurred.

Experience indicates that outbreaks of the army worm may occur at any time in the wet season without warning, although they are most frequent in January. So far, it has not been possible to correlate the outbreaks with weather or any other single factor and no attempt can be made to forecast them at the beginning of a growing season.

Chafer Beetle on Maize

The chafer beetle, *Adoretus cribrosus* Har., has caused more widespread damage to maize in 1955 than reported in previous years, some-

times necessitating replanting. The beetle hides by day just beneath soil surface and at night feeds on maize leaves, causing characteristic elongated holes.

Mealybug on Pineapple

Pineapple plants at Umtali, lightly infested with *Pseudococcus* sp., showed symptoms apparently the same as those of pineapple wilt reported under similar circumstances from Mauritius and Hawaii. The symptoms were shown by most plants in a 40-acre plantation.

White Mango Scale on Laurel

The white mango scale, *Aulacaspis cinnamomi* Newst., was recently found on leaves of laurel (*Laurus nobilis*) at Bay Laurel, Salisbury. This scale is a common pest on mango, but laurel was not previously recorded as a host.

Red Locust

Red locust, *Nomadacris septemfasciata* Serv., was found in a new locality in Darwin District in small numbers, in the non-gregarious phase.

Plant Quarantine Announcements

Greece

Ministerial Decree of 29 December 1954, published in the *Ephemeris tes Kuberneseos* No. 315 on 31 December 1954, lays down phytosanitary standards for the importation of plants and plant products. This new Decree revokes the Decree of 13 June 1934, as amended 11 December 1937, 12 March 1949, 9 February 1950 and 12 June 1953.

The most important provisions of the new Decree are as follows:

Importation and transit prohibited. Plants and packing materials infested by any pest or disease named in this Decree may not be imported into or transported through Greece. In addition, importation and transit is prohibited in the case of the following plants from the countries specified:

1. Any plants and plant products from Texas, U.S.A., where destructive viruses and *Phymatotrichum omnivorum* occur.
2. Citrus plants and fruits from U.S.A., Argentina, Brazil, Uruguay, Venezuela, Java, Hawaii, Union of South Africa, Gold Coast, Australia, Kenya, Belgian Congo, Rhodesia, Japan and China, where tristeza and other viruses occur.
3. Potatoes for consumption from Bermuda, U.S.A., Canada, Mexico, Brazil, United Kingdom, Spain, Portugal, France, Italy, Switzerland, Luxembourg, Belgium, Netherlands, Germany, Denmark, Yugoslavia, Poland, Czechoslovakia, Finland or Norway where *Doryphora decemlineata* or *Synchytrium endobioticum* occurs.
4. Cotton seed for planting from North Carolina, South Carolina, Mississippi, Arkansas, Louisiana, Oklahoma, Tennessee, New Mexico and Texas of U.S.A., where *Glomerella gossypii* occurs.
5. Alfalfa seed from Argentina and from California, Texas and Florida, U.S.A., where the alfalfa dwarf virus causing Pierce's disease of grapevine occurs.

Seed potatoes. Importation is permitted, subject to the following conditions, after permission has been granted by the Ministry of Agriculture. Points of entry are: Railroad – Eidomeni. Seaports – Piraeus, Eleusis, Chalkis, Volos, Salonica, Patras, Kalamai, Canea and Herakleion (Crete). Airports – Athens, Salonica. The conditions are:

1. The seed potatoes must be accompanied by phytosanitary certificates indicating freedom from *Doryphora decemlineata, Phthorimaea operculella, Synchytrium endobioticum, Pseudomonas solanacearum, Corynebacterium sepedonicum,* and *Heterodera rostochiensis.*
2. They must be free from soil, packed in materials not previously used for the transport of potatoes, and sealed officially with a lead seal. If shipped by railroad, the wagons must be also sealed.
3. On inspection at the point of entry, the tubers must be found free from viruses as well as the diseases and pests (except *Phthorimaea operculella*) listed in the certificate. Tubers affected by *Bacillus phytophthorus* and *Phytophthora* sp. must not exceed 4 percent by weight and tubers affected by *Actinomyces* sp., *Spongospora subterranea, Rhizoctonia solani* and *Oospora pustulans* must not exceed 10 percent by weight and 5 percent of surface area. The

buds of tubers must be free from infection of the last four fungi.
4. They must have been grown in fields at least 10 km. away from fields infested by *Doryphora decemlineata* and *Synchytrium endobioticum*.

Seeds. The importation of the seeds listed below, except those from countries specifically prohibited, is permitted under the conditions prescribed.

1. *Cotton seeds for planting.* The seeds must be accompanied by phytosanitary certificates indicating origin, and certifying that they have been treated with sulphuric acid and that they were found free from *Platyedra gossypiella, Anthonomus grandis, A. vestitus, Glomerella gossypii, Diplodia gossypina,* and *Peronospora gossypina.* They will be treated again by the Cotton Organization on arrival. Ports of entry: Piraeus, Eleusis.
2. *Forage seed for planting.* Consignments must be accompanied by certificates indicating freedom from *Cuscuta.*
3. *Other seeds.* The certificates to accompany the following seeds must indicate freedom from named diseases and pests. They must also contain no seeds of *Cuscuta* and *Orobanche.* Ports of entry: Athens, Piraeus, Eleusis, Patras, Herakleion, Volos, Salonica.

   Maize: *Xanthomonas stewarti, Pyrausta nubilalis.*

   Soybean: *Pseudomonas glycinea, Glomerella glycines, Colletotrichum truncatum.*

   Broad bean, *Lathyrus* beans: *Xanthomonas phaseoli, Pseudomonas medicaginis* f. sp. *phaseolicola, Corynebacterium flaccum-faciens, Colletotrichum truncatum.*

   Tomato: *Corynebacterium michiganense, Verticillium albo-atrum.*

   Cucurbitaceae: *Cercospora melonis, Pseudoperonospora cubensis.*

   Lettuce: *Marssonina panattoniana.*

   Pea: *Pseudomonas pisi, Ascochyta pisi, Septoria pisi.*

   Celery, parsley: *Septoria apii-graveolentis, Phoma apiicola.*

   Durra: *Sphacelotheca sorghi.*

   Peppers, eggplant: *Diaporthe vexans.*

   Spinach: *Peronospora effusa.*

   Tobacco: *Peronospora tabacina.*

   Rice: *Calandra oryzae, C. granaria, Bacillus oryzae, Piricularia oryzae, Helminthosporium oryzae.*

Fruits and vegetables. The fruits and vegetables listed below, except those from countries specifically prohibited, may be imported if accompanied by phytosanitary certificates indicating freedom from named pests and diseases. Small quantities, up to 10 kg., carried by travellers or sent as gifts, are exempt from this requirement, but in all cases the imports are subject to inspection. Ports of entry: Athens, Piraeus, Eleusis, Patras, Herakleion, Volos, Salonica.

1. Citrus fruits of all kinds: *Quadraspidiotus perniciosus, Diaspis pentagona, Ceratitis capitata, Xanthomonas citri.*
2. Other tree fruits: *Q. perniciosus, D. pentagona, Carpocapsa pomonella, C. capitata, Paratetranychus pilosus.*
3. Pineapple and other tropical fruits: scale insects, fungus and bacterial diseases.
4. Vegetables without roots and their fruits: fungus and bacterial diseases, especially *Didymella lycopersici, Phoma destructiva, Corynebacterium michiganense.*

Ornamental plants and flowers. The ornamental plants and flowers listed below, except those from Texas, U.S.A., may be imported if accompanied by phytosanitary certificates indicating freedom from named diseases and pests. Small quantities, up to 5 kg., or cut flowers, carried by travellers or sent as gifts, are exempt from this requirement. Ports of entry: as for fruits and vegetables, excepting Eleusis.

1. Rose bushes, with or without roots, free from soil: *Quadraspidiotus perniciosus, Diaspis pentagona.* Infection of *Diplocarpon rosae, Coniothyrium wernsdorffiae* and *Leptosphaeria coniothyrium* should not exceed 5 percent.
2. Rooted chrysanthemums: viruses, *Diarthronomyia chrysanthemi, Q. perniciosus, D. pentagona.* The plants should be packed without boxes or in containers dusted inside with 10 percent DDT.
3. Ornamental plants of all kinds, with or without roots, free from soil: *Q. perniciosus D. pentagona,* and infectious diseases.
4. Bulbs, tubers, roots and rhizomes: *Doryphora decemlineata, Brachycerus undatus, B. algirus, Merodon* sp., *Eumerus* sp., *Rhizoglyphus echinopus, Xanthomonas hyacinthi, Tylenchus dipsaci.* Infection of the following fungi should not exceed 5 percent: *Sclerotinia bulborum, S. gladioli, Sclerotium tuliparum, Botrytis tulipae, B. narcissicola, B. gladioli, Septoria gladioli.* Dahlia tubers must be free from *Pseudomonus solanacearum.*
5. Fresh flowers. *Q. perniciosus, D. pentagona.*

Forest trees. The following trees must be accompanied by phytosanitary certificates and free from the named diseases and pests. Ports of entry: Piraeus, Athens Airport.

1. Coniferous nursery trees: *Porthetria dispar, Nygmia phaeorrhoea, Rhabdocline pseudotsugae.*
2. Chestnut plants and timber: *Endothia parasitica, Phytophtora cambivora.* As an

exception, dried chestnut timber may be imported from infested countries if it is treated on arrival by an approved method.

Imports by institutions and agriculturists. Nursery plants, cuttings (with or without soil attached), scions or rhizomes of the horticultural and industrial plants listed below may be imported for studies from Europe and Mediterranean countries by Government institutions, agricultural schools and agriculturist proprietors or directors of private nurseries, provided that they are accompanied by phytosanitary certificates indicating freedom from the named pests and diseases and that they were not from trees grown in or near vineyards. They must be fumigated on arrival. Ports of entry: as for fruits and vegetables, excepting Eleusis.

1. Fig: *Phymatotrichum omnivorum.*
2. Olive: *Pseudomonas savastanoi,* scale insects and the disease known as "leptonecrosis."
3. Almond, apricot, peach, plum (*Prunus instititia*): *Laspeyresia molesta, Quadraspidiotus perniciosus, Diaspis pentagona, Ascochyta chlorospora,* viruses.
4. Apple and pear: *Q. perniciosus, D. pentagona, Bacterium amylovorum,* viruses.
5. Citrus: *Q. perniciosus, D. pentagona, Ceroplastes sinensis, Pseudococcus filamentosus, Lepidosaphes gloverii, Phymatotrichum omnivorum, Rhizoctonia lamellifera, Clitocybe tabescens, Corticium salmonicolor, C. koleroga, Sphaeropsis tumefaciens, Sphaceloma fawcetti, Diaporthe citri, Gloeosporium limetticolum, Xanthomonas citri,* tristeza, psorosis, xyloporosis.
6. Medlar, loquat: *Bacterium amylovorum,* viruses.
7. Gooseberries and mulberry: *Elsinoe veneta, Cronartium ribicola, Q. perniciosus, D. pentagona,* viruses.
8. Grapevine: *Erwinia vitivora, Guignardia bidwellii, Phomopsis viticola,* scale insects, viruses.
9. Banana plants and fruits: *Marasmius semiustus* and scale insects. Packing for fruits should not carry Argentine ants.
10. Strawberry: *Colletotrichum fragariae, Dendrophoma obscurans, Peronospora fragariae, Cercospora* sp., *Phytophthora cactorum, P. fragariae, Rhizopus stolonifer,* viruses.
11. Sugarcane and bamboo of all kinds: borers, *Aleurodes, Thielaviopsis paradoxa,* Fiji and other viruses.
12. Hops: *Pseudoperonospora humuli.*
13. Other industrial plants: as determined by the Plant Protection Service.

Imports for scientific purposes. Importation of any plants, with or without soil, for scientific purposes by agricultural institutions and schools is permitted through Piraeus and Athens airport, after permission has been granted by the Ministry of Agriculture. The plants must be accompanied by phytosanitary certificates and are subject to inspection and fumigation. Plants imported from countries infested with insects and diseases not found in Greece are to be grown in special fields under observation for one to three years.

Imports into phylloxera-free regions. Plants, where importation is permitted under the present Decree, may be imported by private importers only into the phylloxera-infested regions of the country. Only those plants permitted under the Ministerial Decree of 29 December 1954 relating to the importation and movement of goods capable of spreading phylloxera (see FAO Plant Prot. Bull. 3: 173. 1955) may be introduced into phylloxera-free regions by private importers.

Imports without restriction. Any plants other than those mentioned in the present Decree may be imported without restriction.

Phytosanitary certificates. Certificates wherever required must indicate the number and weight of packages, identification marks, variety, places where the plants were grown, exporter and consignee. The certificates, which should be in triplicate in the language of the country of origin and in French or officially translated into Greek, must be issued within 20 days from the date of shipment.

Contraventions. Imports not fulfilling the requirements or found to be infested by organisms not found in Greece will be returned to the country of origin or destroyed.

News and Notes

Italy Ratifies the International Plant Protection Convention

The Government of Italy, whose representative signed the International Plant Protection Convention on 2 February 1952, deposited the instrument of ratification with the Director-General of FAO on 3 August 1955. The number of countries contracting to the Convention, including both signatory and adhering members, is thus, at the time of writing, thirty, namely: Argentina, Australia, Austria, Belgium, Cambodia, Canada, Ceylon, Chile, Denmark, Dominican Republic, Egypt, El Salvador, Greece, Guatemala, India, Iraq, Ireland, Italy, Japan, Korea, Laos, Luxembourg, Netherlands, New Zealand, Pakistan, Philippine Republic, Spain, Sweden, the United Kingdom and Yugoslavia.

Plant Protection Conference in Warsaw

The Seventh Session of the International Plant Protection Conference, initially organized by the Eastern European countries, was held in Warsaw 24 February-4 March 1955 and was attended by representatives of the U.S.S.R., the People's Republic of China, Mongolia, Romania, Bulgaria, Czechoslovakia, the German Democratic Republic and Poland. The next Session will be held in Peking in 1956.

The main recommendations of the Seventh Conference, which have been submitted to the participating governments for consideration, were as follows.:

1. *Colorado beetle control.* It was recommended to establish different zones, according to the intensity of infestation, in affected countries. In the heavily infested zones, soil disinfestation should be included in the normal control program. Cooperation between countries in control and research is to be intensified.

2. *Domestic and international quarantine.* It was proposed to adopt uniform quarantine terminology, procedures and legislation. A uniform certificate of health and origin was adopted. Bilateral agreements between participating countries and the publication of a special periodical were recommended.

3. *Pesticides and application equipment.* Closer technical cooperation and standardization of testing methods were recommended.

4. *Cotton pink bollworm control.* Agreement was reached on quarantine measures to regulate the movement of cotton and cotton products. The need for more vacuum fumigation chambers was stressed.

5. *Potato wart control.* It was recommended that breeding and multiplication of resistant varieties be accelerated and the exchange of information on varietal reactions be intensified.

6. *Fall webworm control.* It was recommended to establish two zones surrounding the infested areas, where inspection as well as mechanical and chemical control, partly preventive, should be carried out. Movement of plant products from infested areas will be subject to strict quarantine measures.

Roma - Tip. del Senato del dott. Giovanni Bardi

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